



# FARM MECHANICS

## Merit Badge Requirements

- 1) List 10 common tools found in a well-equipped farm shop and explain how to safely use each one.
- 2) Do the following:
  - A) List ten safety devices in a well-equipped farm shop and explain the function of each.
  - B) Demonstrate proper safety apparel and equipment to be worn and used when operating a grinder, wire-brush wheel, welder, or drill.
  - C) Draw a plan showing a well-equipped farm shop. Point out mandatory safety devices and features in the shop.
- 3) Explain how power is produced or transferred in a:
  - A) Diesel engine
  - B) Hydraulic system
  - C) Transmission or any other power system
- 4) Do TWO of the following:
  - A) Replace the handle of any tool found on the farm.
  - B) Build a tool rack with storage for nails, bolts, nuts, and washers.
  - C) Properly grind the mushroom head off of a chisel or punch.
  - D) Correctly grind or file a screwdriver tip.
- 5) Do ONE of the following:
  - A) Make necessary adjustments to ready a piece of farm equipment or machinery for field operation.
  - B) Choose a piece of farm machinery or equipment. Check all nuts, bolts, and screws. Tighten any that are loose. Replace those that are missing, worn, or damaged.
  - C) Repair broken or worn farm machinery or equipment.
- 6) Make a list of safety precautions for adjustments or repairs you make for requirement 5.
- 7) Do ONE of the following:
  - A) On an engine-powered machine: grease all fittings, change oil and oil filter, clean air cleaner, flush cooling system, clean radiator fins, and replace diesel fuel filters.
  - B) With any farm machine, do a daily service check for field use. (Do things needed for best field performance.)
  - C) Prepare any farm machine for winter storage.
- 8) Visit an implement dealer. Interview the dealer technician or service manager for hints on good preventive maintenance. Ask why it is important. What are the costs? What happens that causes wear or damage? Report on what you discovered.
- 9) Explain each step in ONE of the following maintenance procedures:
  - A) Tightening hydraulic fittings.
  - B) Servicing spark plugs.
  - C) Lubricating a clutch-release bearing.
  - D) Cleaning a work piece with a wire-brush wheel.

### Requirement 1

List 10 common tools found in a well-equipped farm shop and explain how to safely use each one:

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Tool: \_\_\_\_\_ How to use one safely: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

## Requirement 2

List 10 safety devices in a well-equipped farm shop and explain the function of each:

Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

\_\_\_\_\_

Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

\_\_\_\_\_

Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

\_\_\_\_\_

Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

\_\_\_\_\_

Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

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Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

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Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

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Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

\_\_\_\_\_

Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

\_\_\_\_\_

Safety Device: \_\_\_\_\_ Function: \_\_\_\_\_

\_\_\_\_\_

List the proper safety apparel and equipment to be worn and used when using each of the following:

Grinder: \_\_\_\_\_

\_\_\_\_\_

Wire-Brush Wheel: \_\_\_\_\_

\_\_\_\_\_

Welder: \_\_\_\_\_

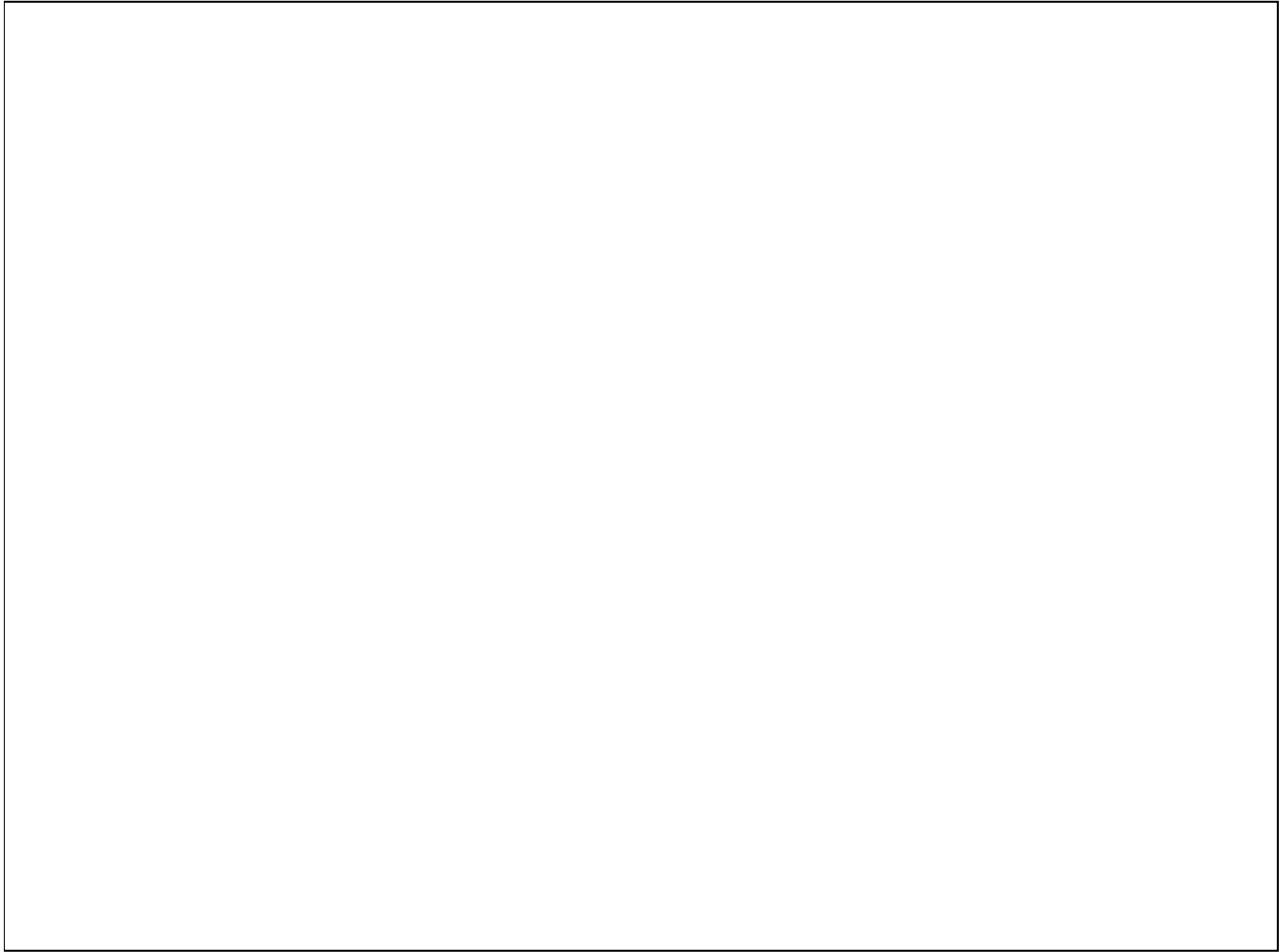
\_\_\_\_\_

Drill: \_\_\_\_\_

\_\_\_\_\_

Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

Use the following area to draw a plan showing a well-equipped farm shop. Identify mandatory safety devices and features in the shop:



**Requirement 3**

Explain how power is produced or transferred in a *diesel engine*: \_\_\_\_\_

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Explain how power is produced or transferred in a *hydraulic system*: \_\_\_\_\_

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Explain how power is produced or transferred in a *transmission* or any other power system: \_\_\_\_\_

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### Requirement 4

For this requirement you have been given 4 options. Select and complete two of them.

If you selected *Option A*:

Replace the handle of any tool found on the farm.

Handle replaced: \_\_\_\_\_ Time it took: \_\_\_\_\_

Briefly describe the process of replacing the handle: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you selected *Option B*:

Build a tool rack with storage for nails, bolts, nuts, and washers. Time it took: \_\_\_\_\_

Draw a small sketch or attach a photo of your tool rack:

If you selected *Option C*:

Properly grind the mushroom head off of a chisel or punch. Time it took: \_\_\_\_\_

Briefly describe the process: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Safety devices used: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you selected *Option D*:

Correctly grind or file a screwdriver tip. Time it took: \_\_\_\_\_

Briefly describe the process: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Scout Name: \_\_\_\_\_ Unit #: \_\_\_\_\_ Date: \_\_\_\_\_

Safety devices used: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Requirement 5

For this requirement you have been given three options. Select and complete one of them.

If you selected *Option A*:

Make necessary adjustments to ready a piece of farm equipment or machinery for field operation.

Describe the adjustments made: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you selected *Option B*:

Choose a piece of farm machinery or equipment. Check all nuts, bolts, and screws. Tighten any that are loose. Replace those that are missing, worn, or damaged.

Name of equipment checked: \_\_\_\_\_ Date: \_\_\_\_\_

Did anything need tightening? YES NO Did anything need replacing? YES NO Describe your inspection: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you selected *Option C*:

Repair broken or worn farm machinery or equipment.

Name of equipment repaired: \_\_\_\_\_ Date: \_\_\_\_\_

Description of repair: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Requirement 6

Make a list of safety precautions for adjustments or repairs you made in requirement 5:

Safety Precaution: \_\_\_\_\_

Safety Precaution: \_\_\_\_\_

Safety Precaution: \_\_\_\_\_

Safety Precaution: \_\_\_\_\_

Safety Precaution: \_\_\_\_\_

### Requirement 7

For this requirement you have been given three choices. Select and complete one of them.

If you selected *Option A*:

On an engine-powered machine: Do the following

- Grease All Fittings
- Change Oil
- Change Oil Filter
- Clean Air Cleaner
- Flush Cooling System
- Clean Radiator Fins
- Replace Diesel Fuel Filters

If you selected *Option B*:

With any farm machine, do a daily service check for field use. (Do things needed for best field performance.)

Describe your service check: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

If you selected *Option C*:

Prepare any farm machine for winter storage.

Describe the process of preparing a farm machine for winter storage: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

### Requirement 8

For this requirement you have been asked to visit an implement dealer and interview the dealer technician or service manager. After your interview answer the following questions:

What hints did the technician give on good preventive maintenance? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Why is preventive maintenance important? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What are the costs of preventive maintenance? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What happens that causes wear or damage? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

What else did you learn or discover from your visit and interview? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Requirement 9**

For this requirement you have been given four options. Select and complete one of them.

If you selected *Option A*:

Explain each step for the maintenance procedure of tightening hydraulic fittings: \_\_\_\_\_

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If you selected *Option B*:

Explain each step for the maintenance procedure of servicing spark plugs: \_\_\_\_\_

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If you selected *Option C*:

Explain each step for the maintenance procedure of lubricating a clutch-release bearing: \_\_\_\_\_

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If you selected *Option D*:

Explain each step for the maintenance procedure of cleaning a work piece with a wire-brush wheel: \_\_\_\_\_

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